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# Oil and Gas Map of the Middlesboro 30 x 60 Minute Quadrangle, Kentucky

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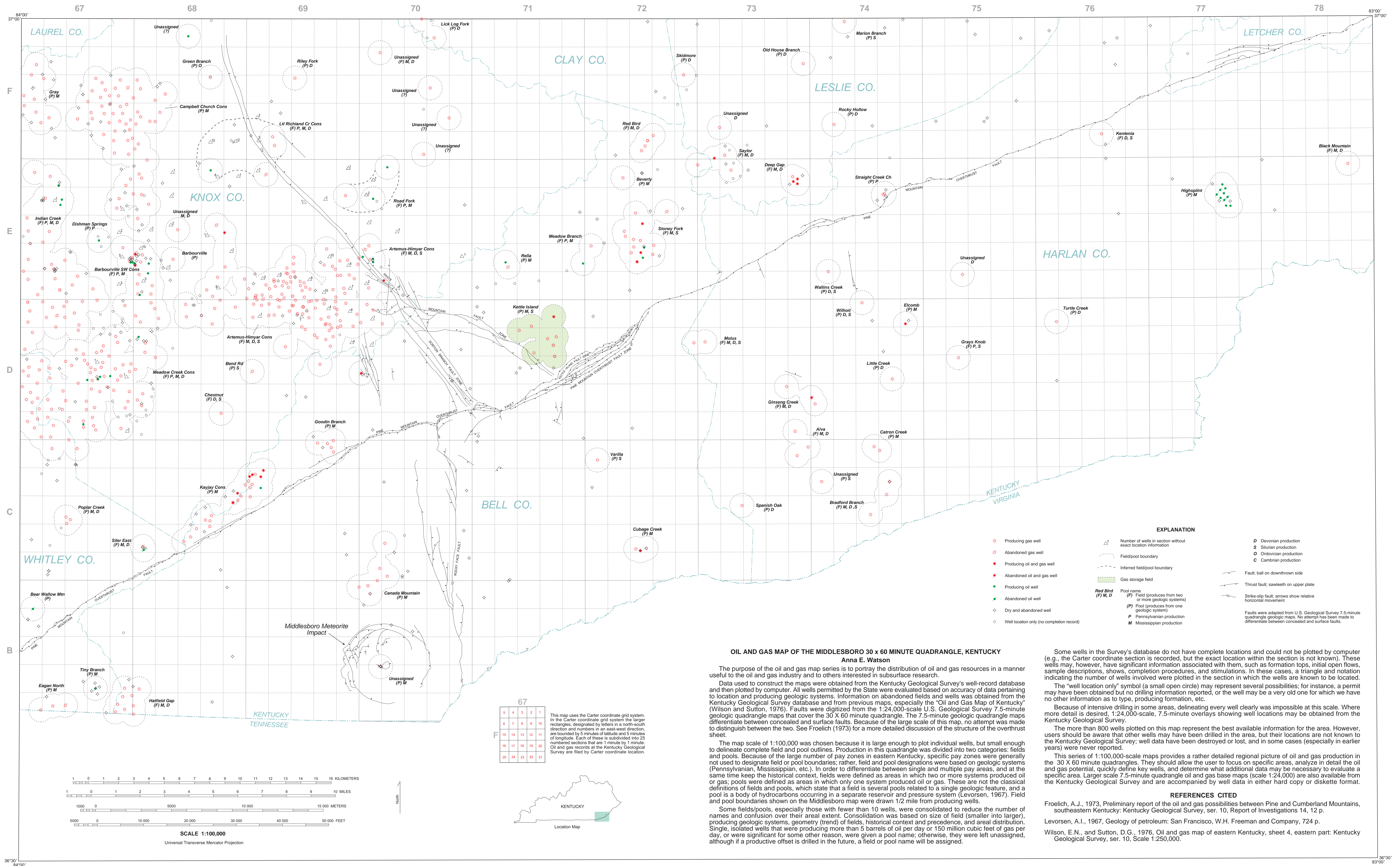
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**OIL AND GAS MAP OF THE MIDDLESBORO 30 x 60 MINUTE QUADRANGLE, KENTUCKY**  
 Anna E. Watson

The purpose of the oil and gas map series is to portray the distribution of oil and gas resources in a manner useful to the oil and gas industry and to others interested in subsurface research.

Data used to construct the maps were obtained from the Kentucky Geological Survey's well-record database and then plotted by computer. All wells permitted by the State were evaluated based on accuracy of data pertaining to location and producing geologic systems. Information on abandoned fields and wells was obtained from the Kentucky Geological Survey database and from previous maps, especially the "Oil and Gas Map of Kentucky" (Wilson and Sutton, 1976). Faults were digitized from the 1:24,000-scale U.S. Geological Survey 7.5-minute geologic quadrangle maps that cover the 30 X 60 minute quadrangle. The 7.5-minute geologic quadrangle maps differentiate between concealed and surface faults. Because of the large scale of this map, no attempt was made to distinguish between the two. See Froelich (1973) for a more detailed discussion of the structure of the overthrust sheet.

The map scale of 1:100,000 was chosen because it is large enough to plot individual wells, but small enough to delineate complete field and pool outlines. Production in this quadrangle was divided into two categories: fields and pools. Because of the large number of pay zones in eastern Kentucky, specific pay zones were generally not used to designate field or pool boundaries; rather, field and pool designations were based on geologic systems (Pennsylvanian, Mississippian, etc.). In order to differentiate between single and multiple pay areas, and at the same time keep the historical context, fields were defined as areas in which two or more systems produced oil or gas; pools were defined as areas in which only one system produced oil or gas. These are not the classical definitions of fields and pools, which state that a field is several pools related to a single geologic feature, and a pool is a body of hydrocarbons occurring in a separate reservoir and pressure system (Levorsen, 1967). Field and pool boundaries shown on the Middlesboro map were drawn 1/2 mile from producing wells.

Some fields/pools, especially those with fewer than 10 wells, were consolidated to reduce the number of names and confusion over their areal extent. Consolidation was based on size of field (smaller into larger), producing geologic systems, geometry (trend) of fields, historical context and precedence, and areal distribution. Single, isolated wells that were producing more than 5 barrels of oil per day or 150 million cubic feet of gas per day, or were significant for some other reason, were given a pool name; otherwise, they were left unassigned, although if a productive offset is drilled in the future, a field or pool name will be assigned.

Some wells in the Survey's database do not have complete locations and could not be plotted by computer (e.g., the Carter coordinate section is recorded, but the exact location within the section is not known). These wells may, however, have significant information associated with them, such as formation tops, initial open flows, sample descriptions, shows, completion procedures, and stimulations. In these cases, a triangle and notation indicating the number of wells involved were plotted in the section in which the wells are known to be located.

The "well location only" symbol (a small open circle) may represent several possibilities; for instance, a permit may have been obtained but no drilling information reported, or the well may be a very old one for which we have no other information as to type, producing formation, etc.

Because of intensive drilling in some areas, delineating every well clearly was impossible at this scale. Where more detail is desired, 1:24,000-scale, 7.5-minute overlays showing well locations may be obtained from the Kentucky Geological Survey.

The more than 800 wells plotted on this map represent the best available information for the area. However, users should be aware that other wells may have been drilled in the area, but their locations are not known to the Kentucky Geological Survey; well data have been destroyed or lost, and in some cases (especially in earlier years) were never reported.

This series of 1:100,000-scale maps provides a rather detailed regional picture of oil and gas production in the 30 X 60 minute quadrangles. They should allow the user to focus on specific areas, analyze in detail the oil and gas potential, quickly define key wells, and determine what additional data may be necessary to evaluate a specific area. Larger scale 7.5-minute quadrangle oil and gas base maps (scale 1:24,000) are also available from the Kentucky Geological Survey and are accompanied by well data in either hard copy or diskette format.

**REFERENCES CITED**

Froelich, A.J., 1973. Preliminary report of the oil and gas possibilities between Pine and Cumberland Mountains, southeastern Kentucky: Kentucky Geological Survey, ser. 10, Report of Investigations 14, 12 p.  
 Levorsen, A.I., 1967. Geology of petroleum: San Francisco, W.H. Freeman and Company, 724 p.  
 Wilson, E.N., and Sutton, D.G., 1976. Oil and gas map of eastern Kentucky, sheet 4, eastern part: Kentucky Geological Survey, ser. 10, Scale 1:250,000.

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